City and State	Total Number of Deaths 1936	1935	Increase or Decrease Over Previous Year	Per Cent Increase or Decrease	Deaths Due to Accidents in City 1936	1935	Increase or Decrease Over Previous Year	Per Cent Increase or Decrease
Total (131 cities)	9,599	9,777	−178	− 1.8	7,032	7,354	−322	− 4.4
Berkeley, California	22	29	− 7	− 24.1	11	17	− 6	− 35.3
Glendale, California	20	25	− 5	− 20.0	12	19	− 7	− 36.8
Long Beach, California	61	51	+ 10	+ 19.6	46	47	− 1	− 2.1
Los Angeles, California	537	552	− 15	− 2.7	433	451	− 18	− 4.0
Oakland, California	102	81	+ 21	+ 25.9	89	73	+ 16	+ 21.9
Pasadena, California	31	17	+ 14	+ 82.4	20	12	+ 8	+ 66.7
Sacramento, California	61	50	+ 11	+ 22.0	25	30	− 5	− 16.7
San Diego, California	59	76	− 17	− 22.4	41	59	− 18	− 30.5
San Francisco, California	92	60	+ 32	+ 53.3	90	60	+ 30	+ 50.0
San Jose, California	22	19	+ 3	+ 15.8	9	9	0	0
New York, New York	932	1,076	−144	− 13.4	932	1,070	−138	− 12.9
Chicago, Illinois	715	806	− 91	− 11.3	278	245	+ 33	+ 13.5
Philadelphia, Pennsylvania	282	245	+ 37	+ 15.1	704	772	− 68	− 8.8

January 13, 1937, gives "An Annual Summary for 1936, with Number of Deaths and Per Cent Change for 131 Cities," and states:

. . . A total of 9,599 automobile fatalities occurred during 1936 in 131 major cities, according to reports of the Bureau of the Census, Department of Commerce. The 1936 toll was 178 fewer than the 9,777 reported for 1935. . . .

. . . Fatalities were reduced in New York and Chicago, the two largest cities in the country. . . .

. . . San Francisco reported 50.0 per cent more automobile fatalities in 1936 than in the previous year. In this city there were ninety deaths in 1936, and sixty in 1935. . . .

. . . The present report gives a summary of the figures for the years 1936 and 1935. . . .

. . . Tabulations show for each city the total deaths due to automobile accidents, and the deaths which result from automobile accidents within the city limits. The total deaths, therefore, include all those instances in which the automobile accident did not occur within the city proper, but in which the injured person was brought into the city, and died there. . . .

* * *

Ratings of Ten California Cities.—For the information of readers, the figures for the ten California cities listed in the report on 131 municipalities are given, the New York City, Chicago, and Philadelphia tabulations also being appended for contrast. (See table above.)

Is it necessary to add that mortality statistics such as the above provide food for serious thought?

Other State Association and Component County Society News.—Additional news concerning the activities and work of the California Medical Association and its component county medical societies is printed in this issue, **commencing on page 119.**

Health at New Orleans.—Telegraphic reports to the United States Department of Commerce from eighty-six cities with a total population of 37,000,000, for the week ended December 5, indicate that the highest mortality rate (21.3) appeared for New Orleans and that the rate for the group of cities as a whole was 12.2. The mortality rate for New Orleans for the corresponding period last year was 19.4 and for the group of cities, 12.2. The annual rate for eighty-six cities for the forty-nine weeks of 1936 was 12 as against a rate of 11.3 for the corresponding period of the previous year. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

EDITORIAL COMMENT†

RECENT IMPROVEMENTS IN METHODS OF BIO-ASSAY*

Methods of performing biologic assay have recently been receiving considerable attention. The importance of the studies by Trevan[1] and Burn,[2] which make it possible to place this subject on a sound scientific and statistical basis, is being more generally appreciated.

The older method of injecting a series of animals with gradually increasing doses of the substance to be tested was usually not productive of a sharp end-point; frequently an animal receiving one of the larger doses would not react, while one receiving a smaller dose would give a positive test, thus leaving no definite level for the end-point. Anyone who has done much work in the biological laboratory knows that such a result is more common than to find a sharp demarcation in a series. Trevan and Burn have pointed out that animal variation must be considered in seeking biologic end-points, and that the only way to accomplish this is to inject a large number of animals with the same (submaximal) dose of the substance to be tested. The true end-point will then be represented by the percentage of reaction at that dose. If the percentage of reaction at several levels is determined, a toxicity curve can be constructed which will be characteristic of the reaction of that species to that drug. The percentage of possible error at the various levels can also be computed, using a formula which considers the number of animals used, the number of positive and negative reactions, and the size of the dose. The application of these concepts to older work based upon biologic assay has been productive of some surprising results.

† This department of CALIFORNIA AND WESTERN MEDICINE presents editorial comment by contributing members on items of medical progress, science and practice, and on topics from recent medical books or journals. An invitation is extended to all members of the California Medical Association to submit brief editorial discussions suitable for publication in this department. No presentation should be over five hundred words in length.

* From the Departments of Pharmacology and Medicine of the University of California Medical School.

1 Trevan, J. W.: The Error of Determination of Toxicity, Proc. Roy. Soc., 101:483-514 (July), 1927. Series B. London.

2 Burn, J. H.: Errors of Biological Assay, Physiol. Rev., 10:146-169, 1930.

A recent example is some work with the clinical modification of the Reid-Hunt acetonitrile test, which was said to indicate the presence of an increased amount of thyroid, or of thyreotropic hormone from the anterior pituitary, in the blood stream. The test was accomplished by noting the effect of injections of the blood serum to be tested upon the resistance of white mice to acetonitrile. Recent work[8] applying the methods of bio-assay, as advocated by Trevan and Burn, to this test has shown it to be without any clinical value.

Another important fact requiring consideration is the number of preparations that are now on the market with potency expressed in various animal units. It is obvious that unless the proper methods of bio-assay are used, the potency of the marketed preparation will vary as much as the resistance of the animals used, and it would be of interest, therefore, to have more details concerning methods of biological assay from pharmaceutical houses offering assayed substances for sale.

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ROBERTO F. ESCAMILLA,
San Francisco.

THE PHYSICIAN: SCIENTIST OR ARTIST?

Ignoring for the moment many secondary meanings, science may be defined as the classification and coördination of factual knowledge; art as the utilization or application of knowledge to accomplish desired results. In the former case, knowledge is static; in the latter it is dynamic.

If the foregoing definitions are correct, it is evident that the present-day tendency to regard medicine as strictly a science is ill advised. For reasons of policy, perhaps such a conception is well enough. But any scheme of classification that fails to consider the claims of art in the premises does violence to a fair appraisal of the question.

Most basic knowledge concerning the structure and functions of the human body obviously is derived from science. Equally obviously the practical application of that knowledge falls within the province of art.

All living things are manifestations of art in the sense that their interpretation may be approached only through the artistic faculties. It is not possible to apply to them the cold, formal, unchanging rules and methods of science. Science confines itself to the material, and refuses to concede that the difference between animate and inanimate matter is in any important respect significant. Conclusions adduced from the study of matter, even its minutest subdivisions, refer exclusively to physical states existing at certain definite moments of time, not to the constantly changing conditions which constitute the very essence of living processes. Science seeks only data that are fixed and stable relative to the material elements which form life's medium of expression.

To be sure, matter is the essential basis of life as mortals know it. But there is a profound and fundamental distinction between living and nonliving matter, which in the very nature of things science does not undertake to investigate and explain. Science relies on measurement, mathematical exactness. These depend upon sense perception. It follows that science cannot deal with the intangible factors involved in determining the normality or abnormality of the actions and reactions of living organisms, ordinarily called symptoms. Symptoms point the way, the only way, to diagnosis. And diagnosis is the heart of medical practice.

The complex problems relating to the interpretation of life and its functional activities lie wholly within the sphere of the artistic. This higher plane is the *fons et origo* of those familiar, but scientifically undemonstrable mental processes, analysis, abstract reasoning, logical deduction; and here alone the power to differentiate the abnormal from the normal, to select the one true from many possible conclusions, may operate. Imagination, intuition, inference, judgment—these are faculties belonging to the realm of art as truly as those employed in the appreciation of beauty or the enjoyment of great music.

A master painting is composed of material substance—canvas, pigments, oil. The revelations it makes to the cultured beholder are something other and more. The subtle qualities of perspective, harmony, charm, are in no sense identical with the physical components, however intimately dependent on them.

Until the mystery of life and the riddle of its meaning are solved, the vital phenomena of health and disease cannot be relegated to the domain of science where the yardstick reigns and demonstration by the physical senses is the court of last appeal. Even biology, the so-called "science of life," tacitly recognizes the dilemma and evades it by boldly assuming the fact of life, without claiming to comprehend, much less to explain it.

Medicine is both an art and a science. Any comparison as to relative importance would be invidious. Whether consciously or unconsciously, the physician in the pursuit of his daily duties must needs be an exponent of art no less than of science. Realization of this truth should be an inspiration as well as a constant incentive.

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The Automatic Control of Radium.—At the Westminster Hospital, where special attention has been given to radium therapy for some time, an important advance in technique has been made. The new installation incorporates a system of distant control for the better protection of operators and has allowed larger "bombs" to be used. Additional radium has been acquired to give effect to the conclusion earlier reached by the surgeons in charge of the radiotherapy department that deeper penetration can be obtained by removing the radium to a greater distance from the point of application. Four grams of radium, valued at about $200,000, is used and is carried alternately by two bombs. By a system of automatic electrical control the radium in its container can be lifted from a leaden safe into one of the bombs and swung into position over the patient. The electrical switchboard is situated fourteen feet from the patient's couch. The two bombs and the radium container are made of a heavy ray-proof metallic compound recently invented. The installation, which has involved months of experimental construction and special tools, has cost about $4,000 apart from the radium.

8 Escamilla, R. F.: Failure of the Reid-Hunt Acetonitrile Reaction as a Clinical Test for Hyperthyroidism, Endocrinology. In press.